

Gone With the Wind: the use of AVHRR satellite data for estimating critical wind stress in Florida Bay

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So... what's gone with the wind in Florida Bay? It's seagrass -- indirectly. Strong winds cause resuspension in this shallow bay and reduces light availability; it is believed the winds attribute to the seagrass die-off. The amount of wind stress required for resuspension to occur (critical wind stress) varies spatially, depending on the bottom type (less energy is needed to resuspend bare sandy bottom than vegetated bottom). Once resuspension occurs, settling time also varies depending on the type of sediments in the water column (e.g., silt settles slower than sand). The problem is, these variables are difficult and expensive to measure so they were often assumed as constants in resuspension modeling.

In this talk, I will present a method for estimating maps of critical wind stress and settling time with satellite data, from 800 km in space. Far fetched, eh? The results are encouraging. The derived map of critical wind stress map matches well with the bottom type map surveyed by USGS divers in the summer and fall of 1996. I will also show slides of other remote sensing projects by my teammates: estimating bathymetry for benthic mapping; estimating the effects of resuspension in chlorophyll off Texas; and investigating the relationship of precipitation and chlorophyll in the Southeast U.S.